

WHAT IS CLAIMED IS:

1. A photosensor system comprising
a photosensor array constituted by two-
dimensionally arraying a plurality of photosensors,

5 an image reader which reads a subject image at a
predetermined reading sensitivity by the photosensor
array:

10 sensitivity-adjusting reader which reads the
subject image while changing an image reading
sensitivity of the photosensor array at a plurality of
stages;

15 optimal image reading sensitivity extraction means
for extracting an optimal image reading sensitivity
suitable for the image reading operation on the basis
of a predetermined measurement amount relating to
an image pattern of the subject image read by the
sensitivity-adjusting reader; and

20 reading sensitivity setting means for setting
the optimal image reading sensitivity to a reading
sensitivity of the image reader.

25 2. A system according to claim 1, wherein the
sensitivity-adjusting reader reads the subject image by
setting different image reading sensitivities stepwise
for respective rows of the photosensor array.

30 3. A system according to claim 1, wherein the
sensitivity-adjusting reader reads the subject image by
setting different image reading sensitivities stepwise

for photosensors of a specific row section of one to several specific rows of the photosensor array.

4. A system according to claim 3, the
photosensors of the specific row section of the
5 photosensor array are photosensors of one specific row.

5. A system according to claim 3, further
comprising abnormal pixel determining means for
determining whether the specific row section contain an
abnormal pixel by checking whether the measurement
10 amount corresponding to one column of the specific row
section has changed each time the image reading
sensitivities are switched from one to another.

6. A system according to claim 5, further
comprising sensitivity-adjusting read controlling means
15 for executing the sensitivity-adjusting reading
operation with respect to a specific row section other
than the specific row section if the abnormal pixel
determining means determines that the abnormal pixel
exists in the specific row section.

20 7. A system according to claim 1, wherein the
predetermined measurement amount in the optimal reading
sensitivity extraction means is lightness data
corresponding to the image pattern of the subject image
read by the sensitivity-adjusting reader.

25 8. A system according to claim 1, wherein the
image reading sensitivity of the photosensor array is
set by adjusting a charge accumulating period of the

photosensor.

9. A system according to claim 1, which further comprises, in the image reader and the sensitivity-adjusting reader in the photosensor array, an effective voltage adjuster which applies to each photosensor a correction signal for setting to optimal values effective voltages of signal voltages applied to each photosensor.

10. A system according to claim 1, wherein the optimal reading sensitivity extraction means comprises:

measurement amount comparison means for extracting maximum and minimum values of the measurement amount relating to the image pattern of the subject image for each image reading sensitivity on the basis of the subject image read by a the sensitivity-adjusting reader;

20 dynamic range calculation means for calculating a dynamic range of the measurement amount on the basis of the maximum and minimum values of the measurement amount extracted for each image reading sensitivity; and

25 maximum dynamic range extraction means for extracting an image reading sensitivity having a maximum dynamic range among dynamic ranges of measurement amounts calculated for each image reading sensitivity.

11. A system according to claim 10, wherein the measurement amount comparison means extracts the maximum and minimum values of the measurement amount in a predetermined column range of each row.

5 12. A system according to claim 1, wherein the optimal reading sensitivity extraction means comprises:

10 displacement calculation means for calculating a displacement of the measurement amount relating to the image pattern of the subject image between image reading sensitivities on the basis of the subject image read by the sensitivity-adjusting reader; and

15 maximum displacement extraction means for extracting an image reading sensitivity having a maximum displacement among displacements of measurement amounts between image reading sensitivities.

13. A system according to claim 12, wherein the displacement calculation means calculates a differentiated value of the measurement amount on predetermined columns of each row.

20 14. A system according to claim 1, wherein the optimal reading sensitivity extraction means comprises:

measurement amount comparison means for extracting maximum and minimum values of the measurement amount relating to the image pattern of the subject image for each image reading sensitivity on the basis of the subject image read by the sensitivity-adjusting reader;

dynamic range calculation means for calculating

a dynamic range of the measurement amount on the basis of the maximum and minimum values of the measurement amount extracted for each image reading sensitivity; and

5 maximum dynamic range extraction means for extracting an image reading sensitivity at which the dynamic range of the measurement amount for each image reading sensitivity maximizes and a displacement of the dynamic range between image reading sensitivities minimizes.

10 15. A system according to claim 1, which further comprises abnormal value removing means for removing an abnormal value deviating from a main change trend of the measurement amount, from the measurement amount relating to the image pattern of the subject image read by the sensitivity-adjusting reader.

15 16. A system according to claim 15, wherein the abnormal value removing means removes the abnormal value by performing Fourier transformation for the measurement amount and removing a predetermined high-frequency component from the frequency-converted measurement amount.

20 17. A system according to claim 1, which further comprises:

25 measurement amount comparison means for extracting maximum and minimum values of the measurement amount relating to the image pattern of the subject image for

each image reading sensitivity on the basis of the subject image read by the sensitivity-adjusting reader;

5 a dynamic range calculation means for which calculating a dynamic range of the measurement amount on the basis of the maximum and minimum values of the measurement amount extracted for each image reading sensitivity;

10 specific value extraction means for extracting for each image reading sensitivity a specific value at which the dynamic range of the measurement amount for each image reading sensitivity maximizes and a displacement of the dynamic range between image reading sensitivities maximizes; and

15 abnormality determination means for which determining presence/absence of an abnormality contained in the subject image on the basis of the specific value.

18. A system according to claim 1, wherein

20 each of the photosensors has a source electrode and drain electrode formed via a channel region made from a semiconductor layer, and a top gate electrode and bottom gate electrode formed at least on and below the channel region via insulating films,

25 either of the top gate electrode and bottom gate electrode is used as a light irradiation side, and

charges corresponding to a light quantity irradiated from the light irradiation side are

generated and accumulated in the channel region.

19. A drive control method for a photosensor system having a photosensor array constituted by two-dimensionally arraying a plurality of photosensors comprising :

executing a sensitivity-adjusting reading operation of reading a subject image while changing an image reading sensitivity of the photosensor array at a plurality of stages;

extracting an image reading sensitivity suitable for reading operation of the subject image on the basis of a predetermined measurement amount relating to an image pattern of the subject image read by the sensitivity-adjusting reading operation;

setting the extracted image reading sensitivity as a reading sensitivity in the reading operation of the subject image; and

executing image reading operation of reading the subject image at the set reading sensitivity.

20. A method according to claim 19, wherein the sensitivity-adjusting reading operation is executed by setting different image reading sensitivities stepwise for respective rows of the photosensor array and reading the subject image.

21. A method according to claim 19, wherein the sensitivity-adjusting reading operation is performed by reading the subject image at different image reading

sensitivities that are set stepwise for photosensors of a specific row section of one to several specific rows of the photosensor array.

22. A method according to claim 21, wherein the
5 photosensors of the specific row section of the
photosensor array are photosensors of one specific row.

23. A method according to claim 21, further
comprising determining whether the specific row section
contain an abnormal pixel by checking whether the
10 measurement amount corresponding to one column of the
specific row section has changed each time the image
reading sensitivities are switched from one to another.

24. A method according to claim 23, further
comprising executing the sensitivity-adjusting reading
15 operation with respect to a specific row section other
than the specific row section if the abnormal pixel
determining step determines that the abnormal pixel
exists in the one specific row section.

25. A method according to claim 19, wherein the
20 predetermined measurement amount is lightness data
corresponding to the image pattern of the subject image
read by the sensitivity-adjusting reading operation.

26. A method according to claim 19, wherein the
image reading sensitivity of the photosensor array is
25 set by adjusting a charge accumulating period of the
photosensor.

27. A method according to claim 19, wherein the

extracting the image reading sensitivity comprises :

5 extracting maximum and minimum values of the measurement amount relating to the image pattern of the subject image for each image reading sensitivity on the basis of the subject image read by the sensitivity-adjusting reading operation;

10 calculating a dynamic range of the measurement amount on the basis of the maximum and minimum values of the measurement amount extracted for each image reading sensitivity; and

15 extracting an image reading sensitivity having a maximum dynamic range among dynamic ranges of measurement amounts calculated for each image reading sensitivity.

28. A method according to claim 19, wherein the extracting the image reading sensitivity comprises:

20 calculating a displacement of the measurement amount relating to the image pattern of the subject image between image reading sensitivities on the basis of the subject image read by the sensitivity-adjusting reading operation; and

extracting an image reading sensitivity at which a displacement of the measurement amount between image reading sensitivities maximizes.

25 29. A method according to claim 19, wherein the extracting the image reading sensitivity comprises:

extracting maximum and minimum values of the

measurement amount relating to the image pattern of the subject image for each image reading sensitivity on the basis of the subject image read by the sensitivity-adjusting reading operation;

5 calculating a dynamic range of the measurement amount on the basis of the maximum and minimum values of the measurement amount extracted for each image reading sensitivity; and

10 extracting an image reading sensitivity at which the dynamic range of the measurement amount for each image reading sensitivity maximizes and a displacement of the dynamic range between image reading sensitivities minimizes.

15 30. A method according to claim 19, wherein the extracting the image reading sensitivity comprises:

extracting maximum and minimum values of the measurement amount relating to the image pattern of the subject image for each image reading sensitivity on the basis of the subject image read by the sensitivity-adjusting reading operation;

calculating a dynamic range of the measurement amount on the basis of the maximum and minimum values of the measurement amount extracted for each image reading sensitivity;

25 extracting a specific value at which the dynamic range of the measurement amount for each image reading sensitivity maximizes and a displacement of the dynamic

range between image reading sensitivities maximizes; and

determining presence/absence of an abnormality contained in the subject image on the basis of the specific value.

31. A method according to claim 19, wherein the extracting the image reading sensitivity comprises:

removing an abnormal value deviating from a main change trend of the measurement amount, from the measurement amount relating to the image pattern of the subject image for each image reading sensitivity.

32. A method according to claim 31, wherein the removing the abnormal value from the measurement amount comprises:

15 performing Fourier transformation for the measurement amount and removing a predetermined high-frequency component from the frequency-converted measurement amount.

33. A method according to claim 19, wherein

20 each of the photosensors has a source electrode and drain electrode formed via a channel region made from a semiconductor layer, and a top gate electrode and bottom gate electrode formed at least on and below the channel region via insulating films,

25 either of the top gate electrode and bottom gate electrode is used as a light irradiation side, and charges corresponding to a light quantity

irradiated from the light irradiation side are generated and accumulated in the channel region.